

Reilly Tar & Chemical Site Indianapolis, IN Five Year Review Report

I. Introduction

EPA Region 5 has conducted a five year review of the remedial actions implemented at the Reilly Tar & Chemical (Reilly) site in Indianapolis, Indiana. This review was conducted from February 7, 2000 to March 15, 2000. A site inspection was conducted with representatives from U.S. EPA, the Indiana Department of Environmental Management (IDEM), CH2M Hill and Reilly on March 2, 2000. This report documents the results of the review. The purpose of five year reviews is to determine whether the remedy at the site remains protective of human health and the environment. The methods, findings, and conclusions of these reviews are documented in five year review reports. In addition, five year review reports identify deficiencies found during the review, if any, and identify recommendations to address them.

This review is required by statute and is a Level 1 review. EPA must implement five year reviews consistent with the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA Section 121(c) as amended states:

If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after initiation of such remedial actions to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP Part 300.430 (f)(ii) of the Code of Federal Regulations (CFR) states:

If a remedial action is selected that results in hazardous substances, pollutants or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the remedial action.

This is the first five year review conducted for the Reilly site. The triggering action for this statutory review is the date of actual on-site remedial action construction, which was October 1994. Because hazardous substances remain at the site above levels that allow for unlimited use and unrestricted exposure, a five year review is required by statute.

II Site Chronology

Table 1 below lists the chronology of events for the Reilly site.

<u>Date</u>	<u>Event</u>
1984	Site finalized on NPL
3/87	Consent order to conduct RI/FS completed
1987-1991	RI/FS completed at site
1989	Reilly changes corporate name to Reilly Industries, Inc.
6/30/92	ROD signed for OU 1 perimeter groundwater extraction system
9/92	RCRA corrective action at site incorporated into existing RI/FS consent order
9/30/93	ROD signed for OU 2-low temperature thermal desorption and in-situ solidification
9/27/96	ROD signed for OU 3 and OU 4 (OU 3-permeable cover, OU 4 - asphalt concrete cover and soil vapor extraction)
6/30/97	ROD signed for OU 5 - monitored natural attenuation for off-site groundwater plume
10/6/97	ESD signed for OU 2, changing remedy from thermal desorption to off-site thermal treatment for approximately 8500 tons to soil

III Background

The Reilly Tar & Chemical Site (the Site) is located at 1500 S. Tibbs in Indianapolis, Indiana. Minnesota Street divides the 120 acre parcel into two parcels (See Figures 1, 2 and 3). The Oak Park property, occupying approximately 40 acres, is located north of Minnesota Street. The Maywood property, occupying approximately 80 acres, is located south of Minnesota Street. Industrial development of the Reilly site began in 1921 when the Republic Creosoting Company started a coal tar refinery and a creosote wood treatment operation on the southern end of the property. On-site wood treatment operations occurred from 1921 to 1972. Beginning in 1941, several chemical plants were constructed and operated on the northern end of the property. Environmental problems at the site are related to the management and disposal of creosoting process wastes and to wastes associated with and substances used in the process of manufacturing custom synthesized specialty chemicals. The Reilly site is surrounded by a mix of residential, industrial, and commercial properties. Residential neighborhoods are located immediately adjacent to the eastern property boundary of the Oak Park parcel. Two residences are also located abutting the northwest corner of the site. Commercial and industrial properties are located south and west of the site. All residents in the area of the contaminated groundwater plume have been connected to the municipal water supply.

In 1984, Reilly was listed on the National Priorities List making it eligible for cleanup under the Superfund program. In 1987, Reilly agreed to conduct a remedial investigation/feasibility study

FIGURE 1

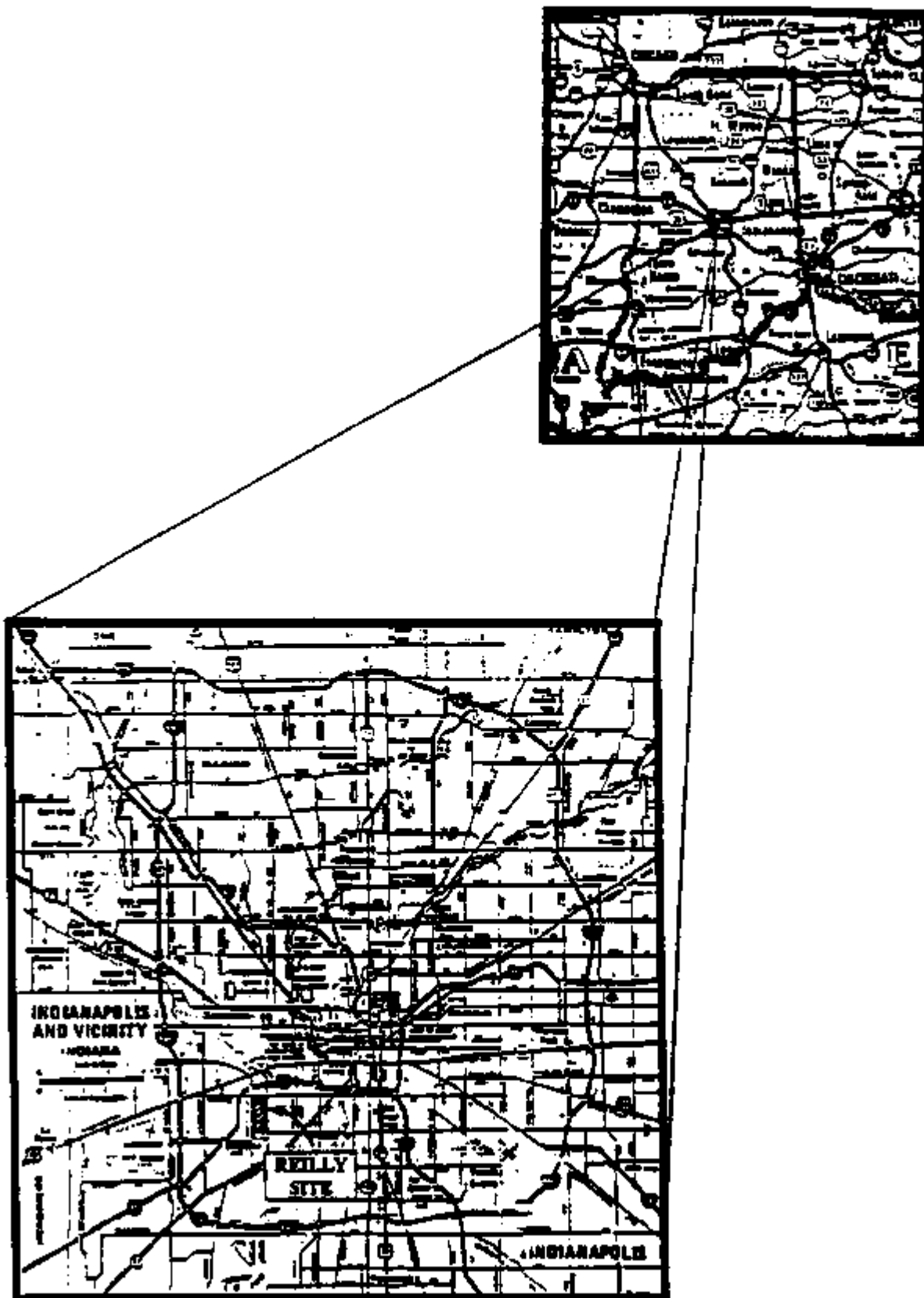
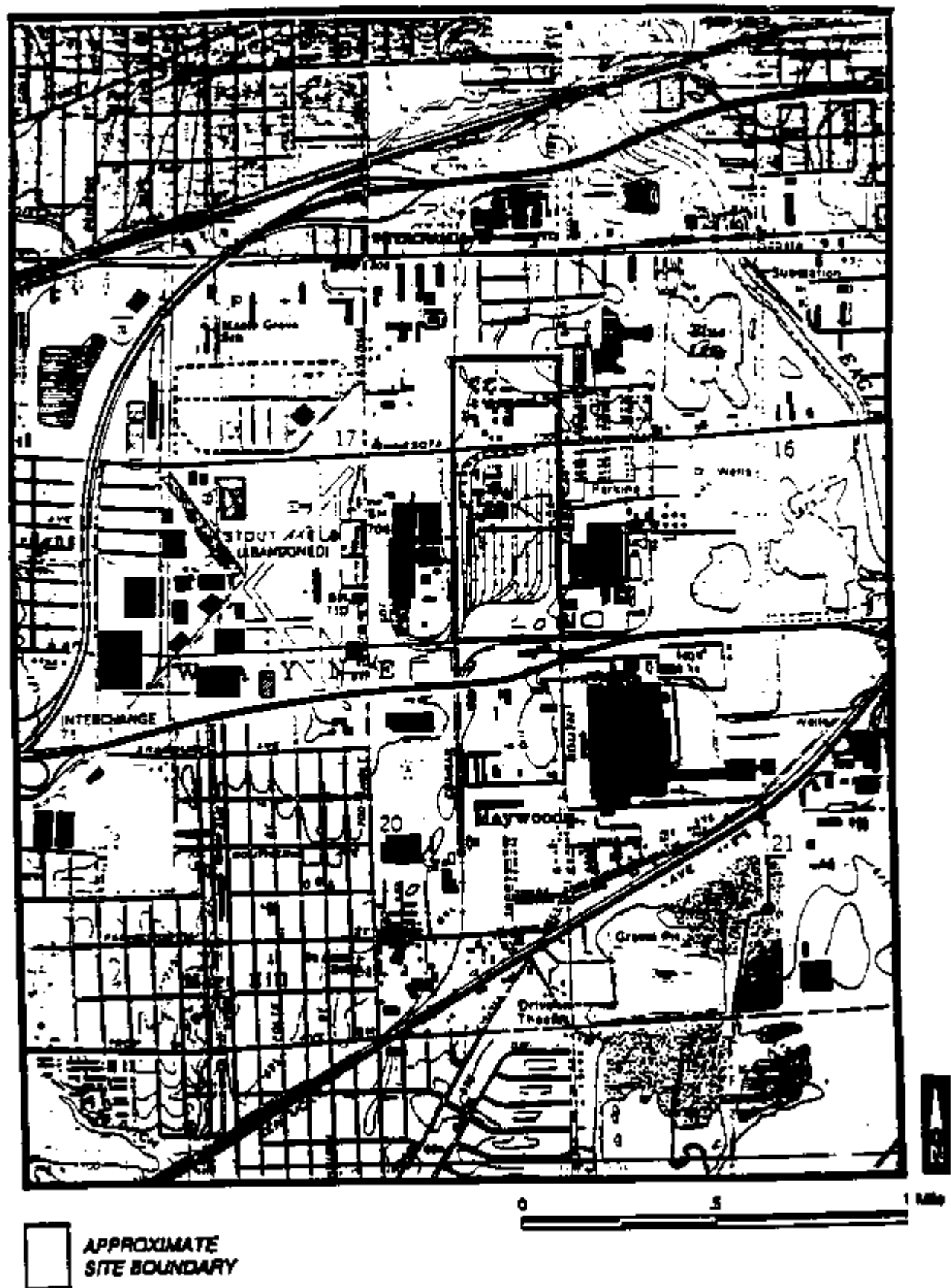


FIGURE 2



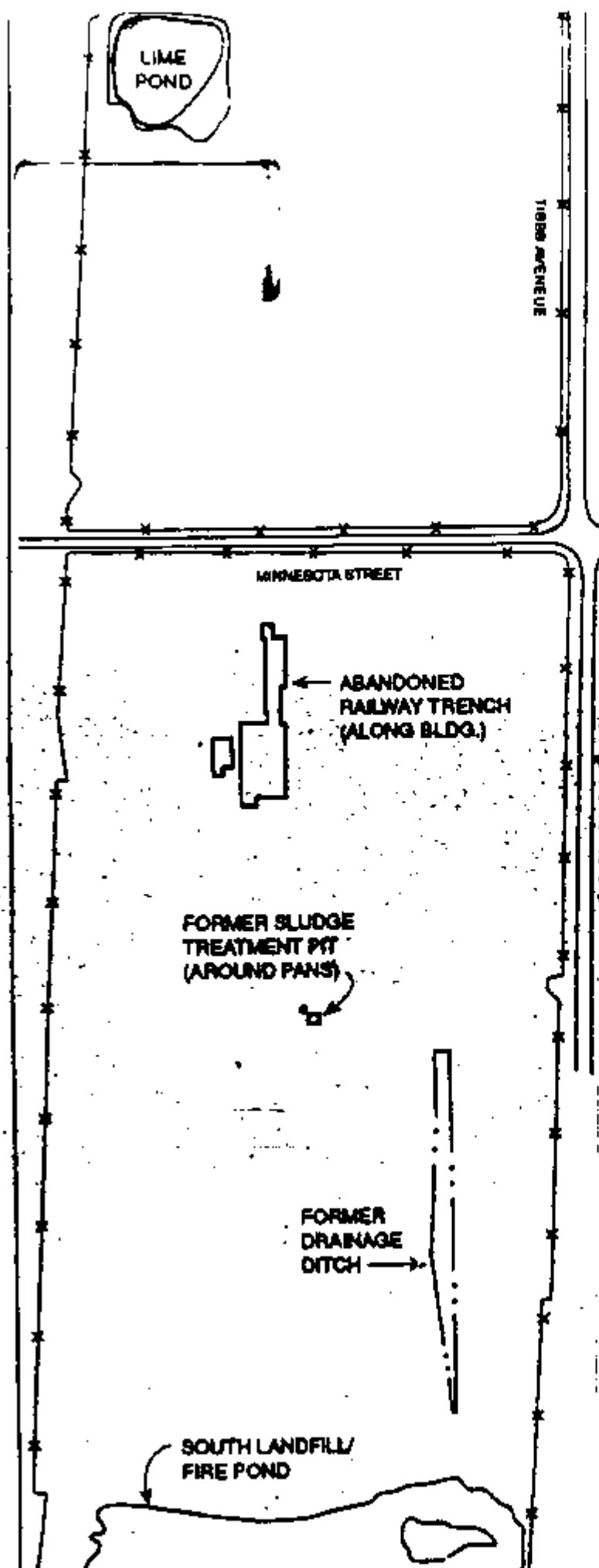


FIGURE 3

to evaluate and compare remedial alternatives according to the terms of an Administrative Order on Consent between the EPA and Reilly. The RI identified five main source areas on-site that were the primary contributors to soil and groundwater contamination at the site. These included the Lime Pond, the Railway Trench, the Sludge Treatment Pit, the Drainage Ditch, and the South Landfill/Fire Pond.

IV Remedial Actions

OU 1

8/94 to 9/94

Two extraction wells installed with discharge to the local Publicly Owned Treatment Works (POTW)

August 1997

Two additional extraction wells added to existing network and chemical addition added due to well fouling

OU 2

7/27/95 to 11/3/95

In-situ solidification activities at south landfill area

9/11/95 to 5/3/96

Thermal desorption for 1500 tons of soil

10/19/96 to 1/7/97

Thermal desorption of 2100 tons of soil

10/6/97

ESD changing thermal desorption remedy to off-site thermal treatment because technology was not entirely effective at treatment

11/19/97 to 2/13/98

Off-site shipment of soil for thermal treatment

OU 3

3/15/99 to 6/1/99

Permeable cover installation of 8100 cubic yards of gravel and 1600 cubic yards of topsoil

OU 4

9/4/98 to 12/18/98

Concrete cover installation over two hot spot areas

8/23/99 to 10/4/99

Construction of soil vapor extraction system

OU 5

Ongoing monitoring continues of both on-site and off-site groundwater quality to determine the effectiveness of the monitored natural attenuation remedy.

V Five Year Review Findings

OU 1

The perimeter groundwater extraction system has been operational since October 1994. The system operates continually and pumps approximately 220 gallons per minute. The extracted groundwater is discharged through sewers located on the Reilly property to the local Southport Publicly Owned Treatment Works (POTW). Reilly has addressed several problems that have

arisen from the operation of this perimeter groundwater extraction system. In 1996, it was discovered that the extraction well screens were clogged with precipitate of an unknown origin, which resulted in overheating of the well pump and ultimate shutdown of groundwater extraction. EPA directed Reilly and their contractor to undertake a study to determine the nature of the precipitate and to determine potential corrective action(s) for the problem. This study commenced in early 1997, and the results of the study indicated that a chemical additive system in the extraction well would prevent the precipitate buildup. This chemical additive system was added to well PW-2 and was effective at preventing the precipitate buildup problem. This additive system was used until December 1998 when it was determined that the precipitate was no longer occurring. The additive system will remain in place indefinitely should the precipitate problem recur.

In March 1997, through review of groundwater data, U.S. EPA determined that the two well extraction system was not providing complete containment at the facility boundary, as was required by the OU 1 ROD. Review of the monthly monitoring reports and the contractor prepared contour maps of the monitoring results indicated that groundwater was migrating a short distance beyond the site boundary. U.S. EPA identified this to Reilly and a study was commenced to determine how to best remedy this problem. That study concluded that adding two extraction wells to the existing two well system was necessary to provide complete containment of the groundwater plume. These two additional wells (PW-3 and PW-4) were added in August 1997 and are currently operating at approximately 30 and 15 gallons per minute respectively. Recent monitoring results now demonstrate that the system is meeting its performance goals and the system will continue to be operated and monitored indefinitely.

OU 2

The sludge solidification was completed in November 1995 with final seeding of the soil cover over the South Landfill completed in April 1996. Since that time, the cover has been inspected on a quarterly basis. For the first several years after cover installation, seeps of coal tar sludge were discovered along the southwest slope of the landfill. These seeps consisted of tar-like sludge that was seeping from the base of the landfill slope. This was not unexpected and the sludge seeps were collected, and disposed of as hazardous waste off-site, in accordance with Reilly's Part B permit. Landfill cap inspections include specific directions for monitoring this area of the cap for future seeps, which will continue indefinitely. In 1999, additional seeps were discovered on the road along the northern edge of the landfill. These seeps were collected and disposed off-site as hazardous waste. At the March 2000 inspection, EPA inspected the areas where seeps were discovered in 1999 and reinforced the requirement for seep collection with Reilly. Requirements for monitoring for and remediating future seeps are contained in the OU 2 O&M plan.

OU 3

Construction of the soil and gravel covers over the kickback area was completed in June 1999.

At the November 1999 final inspection for OU 4 and at the March 2000 inspection, these covers were inspected and determined to be satisfactory.

OU 4

The concrete covers were completed in December 1998. These covers are inspected on a quarterly basis by Reilly and the results of these inspections are reported to EPA in progress reports. These covers were inspected in November 1999 and March 2000 by U.S. EPA and remain effective and performing as designed.

The soil vapor extraction (SVE) system was completed in October 1999 and began operating at that time. U.S. EPA completed an inspection in November 1999 and in March 2000 and determined that the SVE system was operating effectively. The SVE system will operate for a minimum of three years with well changeouts occurring every six months. The current system configuration is five active SVE wells and five passive SVE wells. The well changeout consists of rotating the 10 extraction wells from active to passive, which is used to maximize the SVE performance. The first SVE well changeout is scheduled for late March 2000 and the first six months of system operation will be summarized for the aforementioned April meeting with the Agencies. SVE emission monitoring requirements are contained in the OU 4 remedial action work plan, and will continue until SVE completion. At present, the SVE system is operating as designed.

OU 5

Off-site contaminant levels have changed since the perimeter groundwater extraction system began operations. The effectiveness of natural attenuation in remediating the off-site groundwater plume is monitored quarterly and the latest results indicate that levels of contamination in some of the wells have decreased while others have remained constant. If off-site levels do not decline over time, as modeled, then the OU 5 ROD contains contingencies for addressing this issue.

VI Assessment

OU 1

After the addition of the two extraction wells to the system, the entire system has been evaluated and is currently meeting the ROD performance goal of containment at the eastern property boundary. Currently, monitoring is conducted on a quarterly basis, with monitoring results being transmitted to the Agencies along with contour maps of groundwater levels and contaminant concentration information. The U.S. EPA is tracking the progress of the extraction system and will continue to do so indefinitely, in accordance with the terms of the consent decree for OU 1. Extraction wells are cleaned twice a year and the well pumps are serviced at the same time. Several pumps have already been replaced due to routine wear.

OU 2

Monitoring of the other OU 2 areas that utilized low temperature thermal desorption continues with downgradient monitoring wells used to track contaminant concentrations. The contaminant concentrations in these wells have generally declined since the completion of the thermal desorption activities although some are still above cleanup standards. The OU 1 perimeter extraction system remains effective at preventing any of this contamination from moving off-site. The covers that were placed over these areas after thermal treatment was completed are intact and performing as designed. These include concrete covers over the railway trench, the sludge treatment pit and the lime pond and a soil cover over the drainage ditch. These covers will continue to be inspected and maintained by Reilly as required by the OU 2 consent decree.

OU 3

The grass and gravel cover are performing as designed. Because the yearly site inspection occurred before the growing season, the grass cover should be inspected again by Reilly later in the 2000 growing season to determine if additional seeding is necessary for complete coverage. Requirements for continued inspections of these areas are contained in the remedial action work plan for OU 3.

OU 4

The concrete covers are intact and performing as designed over the two hot spot areas. The performance of the SVE system for the first six months of operation has been presented to the Agencies and a review meeting has been scheduled to discuss system performance and the first well changeout.

OU 5

At present, off-site levels have decreased in many wells but not on a consistent basis. Further assessment is necessary before a definitive assessment of natural attenuation effectiveness can be made. The well restriction imposed by the Marion County Health Department that restricts installation and usage of private wells in the area of the off-site contamination plume remains in effect and prevents any contact with contaminated groundwater in the off-site area.

VII Deficiencies

At present, all of the remedies are performing adequately and achieving ROD performance standards. There are no deficiencies at present with any of the implemented remedies.

VIII Recommendations and Required Actions

This five year review report has summarized the current remedial activities at the site and also describes the future monitoring of each constructed remedy at the site. The following actions are recommended for continued operation and maintenance of site remedies:

OU 1

Continued monitoring of site groundwater according to the terms of the OU 1 consent decree. It is recommended that the performance data for the OU 1 system be summarized and contaminant concentrations for off-site wells be presented to gauge the effectiveness of the perimeter extraction system at reducing off-site contaminant concentrations. It is also recommended that the groundwater extraction system be studied to determine if it can undergo optimization to improve performance while maintaining its protectiveness.

OU 2

It is recommended that monitoring of OU 2 areas continue according to the terms of the OU 2 consent decree. Monitoring at the South Landfill area should continue and any additional coal tar seeps should be promptly addressed. It would be helpful if an estimate of how long seeps are anticipated to occur could be prepared and presented to the Agencies.

It is also recommended that the monitoring wells downgradient of the source areas that underwent thermal desorption be studied and results presented to demonstrate how this soil treatment has reduced contaminant loads into the aquifer.

OU 3

It is recommended that monitoring of OU 3 areas continue according to the terms of the consent decree. In particular, the area which received the vegetated soil cover shall be reseeded in spring 2000 to establish the full extent of the grass cover. The areas that received the gravel cover should be continuously inspected to ensure that they continue to maintain six inch gravel thickness.

OU 4

It is recommended that monitoring of OU 4 areas continue according to the terms of the consent decree. In particular, careful attention should be paid to the first soil vapor extraction well rotation and results of the first six months of extraction system monitoring performance should be summarized and presented to the Agencies for a meeting in April 2000.

OU 5

As mentioned for the OU 1 extraction system, a report of off-site contaminant concentration data shall be prepared by Reilly and presented to the Agencies, evaluating the effectiveness of natural attenuation on the off-site plume and presenting trend analyses for the off-site wells. This report should summarize the off-site contaminant concentrations, before and after the construction of the perimeter extraction system, and demonstrate whether natural attenuation processes are impacting off-site contaminant concentrations and be presented to the Agencies so that the results

can be discussed at an April 2000 meeting. If the results of the trend analyses do not demonstrate conclusive evidence of natural attenuation, then current EPA guidance for monitored natural attenuation shall be utilized for alternate methods of evaluating natural attenuation effectiveness.

IX Protectiveness of Remedies

OU 1

The remedy at OU 1 is protective of human health and the environment.

OU 2

The remedies at OU 2 are protective of human health and the environment.

OU 3

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OU 4

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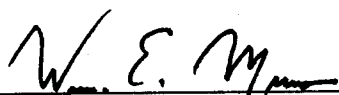
OU 5

The remedy at OU 5 is protective of human health and the environment.

Because the remedial actions at all operable units are protective, the remedy for the site is protective of human health and the environment.

X Next Review

The next five year review will be conducted within five years of the completion of this report, which will be April, 2005.



William E. Muno, Director
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U.S. EPA Region 5

4-6-00
Date